Amendments to the Claims

The listing of claims will replace all prior versions, and listings of claims in the application.

1. (Currently Amended) A method for down-converting an electromagnetic signal, comprising the steps of:

(1) simultaneously down-converting and performing a matched filtering/correlating operation on a portion of an initially received carrier signal, wherein said down-converting and said performing a matched filtering/correlating operation are performed in a single operation;

(2) accumulating the result of the matched filtering/correlating operation of step (1); and

(3) repeating steps (1) and (2) for additional portions of the carrier signal,

wherein step (1) comprises the step of convolving an approximate half cycle of the carrier signal with a representation of itself.

2. (Cancelled)

3. (Currently Amended) The method according to claim 1, wherein step (1) comprises the step of multiplying [[an]] said approximate half cycle of the carrier signal by itself over a predetermined time interval and integrating over the predetermined time interval.

4. (Currently Amended) The method according to claim 1, where $S_0(t)$ is an output of the matched filtering/correlating operation, k is a constant, $S_i(t)$ is [[an]] said approximate half cycle of the carrier signal, and t_0-0 is a predetermined time interval, and wherein step (1) comprises the step of processing [[an]] said approximate half cycle of the carrier signal in accordance with:

$$S_0(t) = k\int_0^{t_0} S_i^2(t)dt\ .$$

5. (Currently Amended) The method according to claim 1, where $S_0(t)$ is an output of the matched filtering/correlating operation, k is a constant, $kS_i(t_0-\tau)$ is an impulse response of a matched filtering/correlating operator, t_0 is a predetermined observation time, $u(\tau)$ is a step function, and S_i $(t-\tau)$ is [[an]] said approximate half cycle of the carrier signal, and wherein step (1) comprises the step of processing the approximate half cycle of the carrier signal in accordance with:

$$S_0(t) = \int_0^{\infty} \left(kS_i(t_0 - \tau)u(\tau) \right) S_i(t - \tau) d\tau \, .$$

6. (Currently Amended) The method according to claim 1, wherein step (2) comprises the step of transferring a portion of the energy contained in [[an]] said approximate half cycle of the carrier signal to an energy storage device.

7. (Currently Amended) The method according to claim 1, wherein step (2) comprises the step of transferring a portion of the energy contained in [[an]] said approximate half cycle of the carrier signal to a capacitive storage device.

8. (Original) The method according to claim 1, further comprising the step of:
(4) passing on the accumulation result of step (2) to a reconstruction filter.

9. (Original) The method according to claim 1, further comprising the step of:
(4) passing on the accumulation result of step (2) to an interpolation filter.

10. (Original) The method according to claim 1, wherein step (3) comprises the step of repeating steps (1) and (2) at a sub-harmonic rate of the carrier signal.

11. (Original) The method according to claim 1, wherein step (3) comprises the step of repeating steps (1) and (2) at an off-set of a sub-harmonic rate of the carrier signal.

12. (Original) The method according to claim 1, further comprising the step of:

(4) performing steps (1), (2), and (3) for positive approximate half cycles of the carrier signal and for inverted negative approximate half cycles of the carrier signal.

13-74. (Canceled)